

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TERMINAL DISCLAIMER TO OBVIATE A PROVISIONAL DOUBLE PATENTING
REJECTION OVER A PENDING "REFERENCE" APPLICATIONDocket Number (Optional)
BUBLEWITZ ET AL-14 PCT

In re Application of: Alexander BUBLEWITZ ET AL

Application No.: 10/589,329

Filed: AUGUST 14, 2006

For: DENTAL MATERIAL BASED ON ALKOXY SILYL-FUNCTIONAL POLYETHERS CONTAINING A SALT OF A STRONG BASE AS
CATALYST

The owner*, KETTENBACH GMBH & CO. KG, of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of any patent granted on pending reference Application Number 11/480,245, filed on JUNE 30, 2006, as such term is defined in 35 U.S.C. 154 and 173, and as the term of any patent granted on said reference application may be shortened by any terminal disclaimer filed prior to the grant of any patent on the pending reference application. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and any patent granted on the reference application are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the owner does not disclaim the terminal part of any patent granted on the instant application that would extend to the expiration date of the full statutory term as defined in 35 U.S.C. 154 and 173 of any patent granted on said reference application, "as the term of any patent granted on said reference application may be shortened by any terminal disclaimer filed prior to the grant of any patent on the pending reference application," in the event that: any such patent granted on the pending reference application: expires for failure to pay a maintenance fee, is held unenforceable, is found invalid by a court of competent jurisdiction, is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321, has all claims canceled by a reexamination certificate, is reissued, or is in any manner terminated prior to the expiration of its full statutory term as shortened by any terminal disclaimer filed prior to its grant.

Check either box 1 or 2 below, if appropriate.

1. For submissions on behalf of a business/organization (e.g., corporation, partnership; university; government agency, etc.), the undersigned is empowered to act on behalf of the business/organization.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

2. The undersigned is an attorney or agent of record. Reg. No. 29,298

Signature

August 12, 2009

Date

Frederick J. Dorchak

Typed or printed name

516 365-9802
Telephone Number

Terminal disclaimer fee under 37 CFR 1.20(d) is included.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

08/17/2009 JADDO1 00000003 10589329

02 FC:2814

70.00 OP

*Statement under 37 CFR 3.73(b) is required if terminal disclaimer is signed by the assignee (owner).

Form PTO/SB/96 may be used for making this statement. See MPEP § 324.

This collection of information is required by 37 CFR 1.321. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Login | Register | My Profile

SIGMA-ALDRICH®

Home | Products | Order Center | Custom Products | Support | MSDS

All

Search | Advanced Search



Chemistry > Chemical Synthesis > Learning Center > ChemFiles > ChemFiles 2001-2003 > Vol 3 No 1 > Tetrameric Phosphazene Bases



Chemistry Products
 ▾ Chemical Synthesis
 ▶ Chem Product Central
 ▶ Learning Center
 ACS Award Winners
 ChemBlogs
 ChemViews
 Cheminars
 New Products Archive
 Technical Buildings
 ChemFiles
 ▶ Chiral Chemistry
 ▶ Cross Coupling
 ▶ Fluorous Chemistry
 ▶ MOFs
 Technology Spotlights
 ▶ Chemistry Services
 ▶ Drug Discovery
 ▶ Solvent Center
 ▶ Stockroom Reagents
 ▶ Stable Isotopes



Vol. 3, No. 1

Strong and Hindered Bases in Organic Synthesis

Download a PDF version (0.69 MB)

Introduction / Phosphazene Bases / Verkade's Superbases / Traditional bases
Preservation of Reagents / Aldrich Schlenk-Type Glassware / Miscellaneous Information

Phosphazene Bases

Introduction / Monomeric Phosphazene Bases (P1) / Dimeric Phosphazene Bases (P2) / Tetrameric Phosphazene Bases (P4)

Tetrameric Phosphazene Bases (P4)

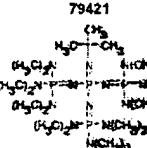
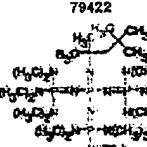
The two P4 phosphazene bases offered by Fluka differ slightly with respect to their steric hindrance and basicity (Table 5).

Table 5. Order of Basicity for P4 Bases

Order of steric hindrance:	P4-i-Oct	>>	P4-t-Bu
Fluka Product Number:	79422		79421
Basicity ($\text{NaCN} / \text{pK}_{\text{BH}^+}$):	42.7		41.9

P4-t-Bu^[1] 79421 and P4-i-Oct 79422, offered as 1 M solutions in hexane have several important features. They are highly sterically hindered, extremely hygroscopic, highly stable towards hydrolysis, 18 orders of magnitude more basic than DBU,^[2] and already in the basicity range typical of organolithium bases. Both 79421 and 79422 are particularly suitable for deprotonation (activation) of pronucleophiles, although also deprotonations for spectroscopic investigations,^[3-7] epimerisations,^[8] double bond shifts,^[9] β -eliminations,^[9-12] and Li⁺ complexation (alkyl-lithium activation)^[13,14] have been reported. See Table 6 for a list of our P2 bases with their properties, package size etc.

Table 6. Phosphazene bases P4

79421	Phosphazene base P4-t-Bu solution
	1-tert-Butyl-4,4,4-tris(dimethylamino)-2,2-bis[tris(dimethylamino)-phosphoranylideneamino]-2 ¹ ,4 ¹ ,5 ¹ -catenadil(phosphazene)
	purum, ~1.0 M in n-hexane C ₂₂ H ₆₃ N ₁₃ P ₄ Mr 633.7 [111324-04-0] 1 ml, 5 ml, 25 ml
79422	Phosphazene base P4-i-Oct solution
	1-tert-Octyl-4,4,4-tris(dimethylamino)-2,2-bis[tris(dimethylamino)-phosphoranylideneamino]-2 ¹ ,4 ¹ ,5 ¹ -catenadil(phosphazene)
	purum, 1.00 M ± 0.02 M in n-hexane C ₂₆ H ₇₁ N ₁₃ P ₄ Mr 689.8 [153136-05-1] 1 ml, 5 ml

Applications: These bases attract increasing interest in the field of anionic copolymerisation^[13-18] and have also been utilized for solid-phase synthesis^[19] related to combinatorial chemistry.^[19,20] They have been reported to support alkylations,^[1,21-31] Michael-additions,^[15,32,33] addition reactions,^[28,34-37] epoxide-opening,^[17,18,38,39] acylations,^[40] sulfonylations,^[41] enionic oxy-Cope rearrangements,^[42] oxidation of carbonions^[37], and transition metal-induced coupling reactions.^[29,43] Among the successfully converted low acidic substrates are alcohols^[35,42], amides^[39,41], peptides (N- and C-activation),^[24] porphyrines,^[4] phosphines,^[28] H-phosphonates,^[31] esters,^[5,25,27,35] α -alkoxyesters^[21] and β -lactones^[23,24], and b, g, δ -lactones,^[23,30] thioesters,^[40] sulfones,^[3,34] episulfones,^[28] benzothiazole,^[21] and benzyl aryl ethers.^[38] β -Hydroxy sulfones,^[34] phosphonothioates,^[31] enol triflates,^[40] benzoturanes,^[36] and subphthalocyanines^[44] are thus efficiently synthesized.

References:

1. For properties, purification, handling, storage, and precautions see: L. A. Paquette, "Encyclopedia of Reagents for Organic Synthesis", Wiley, 1995, Vol. 6, p. 4110.
2. Schweißinger, R. et al., *Liebigs Ann.* 1998, 1055.
3. Gais, H.-J. et al., *Angew. Chem. Int. Ed. Engl.* 1988, 27, 1092.
4. Limbach, H.-H. et al., *Angew. Chem. Int. Ed. Engl.* 1994, 33, 2215.
5. Melnyk, O. et al., *Tetrahedron Lett.* 2001, 42, 9153.
6. Melnyk, O. et al., *J. Org. Chem.* 2002, 67, 528.
7. Solladié-Cavallo, A. et al., *Tetrahedron Lett.* 2002, 43, 415.
8. Kudis, S., Helmchen, G., *Tetrahedron* 1998, 54, 10449.
9. Maddaluno, J. et al., *J. Org. Chem.* 1998, 63, 5110.
10. Ley, S. V. et al., *Tetrahedron: Asymm.* 1994, 5, 2609.
11. Ley, S. V., Mio, S., *Synlett* 1995, 789.
12. Grimme, W. et al., *J. Chem. Soc. Perkin Trans. 2* 1999, 1959.
13. E>Wein, B., Müller, M., *Angew. Chem. Int. Ed. Engl.* 1996, 35, 623.
14. Müller, M. et al., *Polym. Prepr. (Am. Chem. Soc., Div. Polym. Chem.)* 1996, 37, 847.

Fyrster, S., Krdmer, S., *Macromolecules* 1999, 32, 2783.

15. Pietzonka, T., Seebach, D., *Angew. Chem. Int. Ed. Engl.* 1993, 32, 716.

Bvmer, H. G., Heitz, W., *Macromol. Chem. Phys.* 1998, 199, 1815.

16. Molenaar, A., Mvller, M., *Macromol. Rapid Commun.* 1994, 16, 449.

Van Dyke, M. E., Clasen, S. J., *Polym. Prepr. (Am. Chem. Soc., Div. Polym. Chem.)* 1996, 37, 668.

Van Dyke, M. E., Clasen, S. J., *J. Inorg. Organomet. Polymers* 1998, 8, 111.

Hupfield, P. C., Taylor, R. G., *J. Inorg. Organomet. Polymers* 1999, 9, 17.

17. Mvller, M. et al., *Macromol. Rapid Commun.* 1996, 17, 143.

Mvller, M. et al., *Macromol. Symp.* 1996 (Intern. Symposium on Ionic Polymerization 1995), 331.

Schlaad, H. et al., *Macromolecules* 2001, 34, 4302.

18. Memeger Jr., W. et al., *Macromolecules* 1986, 29, 8475, 8588.

19. Brll, W. K.-D. et al., *Synlett* 1998, 1085.

20. Wendeborn, S. et al., *Synlett* 1999, 1121.

21. Schwesinger, R., Schlemper, H., *Angew. Chem. Int. Ed. Engl.* 1987, 26, 1167.

22. Schwesinger, R., *Nachr. Chem. Tech. Lab.* 1990, 38, 1214.

23. Pietzonka, T., Seebach, D., *Chem. Ber.* 1991, 124, 1837.

24. Pietzonka, T., Seebach, D., *Angew. Chem.* 1992, 104, 1543.

25. Seebach, D. et al., *Helv. Chim. Acta* 1996, 79, 588.

26. Prinzbach, H. et al., *J. Am. Chem. Soc.* 1993, 115, 7173.

27. Uhlig, F. et al., *Phosphorus, Sulfur & Silicon* 1993, 81, 155.

Uhlig, F. et al., *Phosphorus, Sulfur & Silicon* 1993, 84, 181.

28. Solla-Cavallo, A. et al., *J. Org. Chem.* 1994, 59, 5343.

29. Muccio, A. B., Simpkins, N. S., *J. Org. Chem.* 1994, 59, 5141-5143.

Simpkins, N. S. et al., *J. Chem. Soc. Perkin Trans. 1* 1997, 323.

30. Fuji, K. et al., *J. Chem. Soc. Chem. Commun.* 1999, 2289.

31. Hultin, P. G. et al., *Tetrahedron* 1996, 52, 6835.

32. Mioskowski, C. et al., *Chem. Eur. J.* 2002, 8, 2910.

33. Bloch, R. et al., *Tetrahedron: Asymm.* 1997, 8, 3655.

34. Chang, C. K. et al., *Tetrahedron Lett.* 1995, 36, 6408.

35. Solla-Cavallo, A. et al., *J. Org. Chem.* 1998, 61, 2690.

36. Prinzbach, H. et al., *J. Org. Chem.* 2001, 66, 5744.

37. Verkade, J. G. et al., *Org. Lett.* 2000, 2, 2409 (Addit mit Benzylanion).

38. Mardon, I. A., Grierson, D. S., *Tetrahedron Lett.* 1999, 40, 7211.

39. Brll, W. K.-D., Tiefert, D., *Tetrahedron Lett.* 1998, 39, 787.

40. Spaltenstein, A. et al., *Bioorg. Med. Chem. Lett.* 2000, 10, 1159.

41. O'Neil, I. A. et al., *Synlett* 1995, 151.

42. Ellis, D., *Tetrahedron Asymm.* 2001, 12, 1589.

43. Mamdani, H. T., Hartley, R. C., *Tetrahedron Lett.* 2000, 41, 747.

44. Palomo, C. et al., *J. Chem. Soc. Chem. Commun.* 1998, 2091.

45. Henack, M. et al., *Synthesis* 1998, 1139.

SIGMA-ALDRICH[Site Use Terms](#) | [Terms and Conditions of Sale](#) | [Privacy](#) | [Contact Us](#) | [Site Map](#)

Copyright © 2009 Sigma-Aldrich Co. All Rights Reserved. Reproduction of any materials from the site is strictly forbidden without permission. Sigma-Aldrich brand products are sold exclusively through Sigma-Aldrich, Inc.